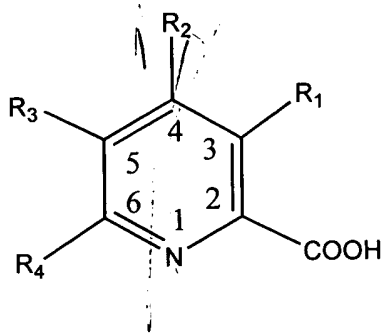
CLAIMS

What is claimed is:

1. A composition capable of solubilizing a conformationally altered protein, said composition comprising a carboxylic acid anion of picolinic acid, its analogs, or derivatives thereof and a cation; wherein said composition is not zinc picolinate, chromium picolinate, molybdenum picolinate; iron picolinate; manganese picolinate, copper picolinate, boron picolinate or vanadium picolinate.

2. The composition of claim 1, wherein said carboxylic acid anion of picolinic acid, its analogs, or derivatives is represented by the following structure:



wherein R_1, R_2, R_3 and R_4 are selected from a group consisting of an oligopeptide, carboxyl group, methyl group, ethyl group, propyl group, isopropyl group, butyl group, isobutyl group, secondary butyl group, tertiary butyl group, pentyl group, isopentyl group, neopentyl group, fluorine, chlorine, bromine, iodine and hydrogen.

3. The composition of claim 2, wherein R_3 is a butyl group.

4. The composition of claim 1, wherein the cation is selected from a group consisting of aluminum, calcium, lithium, magnesium, potassium, sodium, ammonia, ethylenediamine, N-methyl-glutamine, lysine, arginine, omithine, choline, N,N'-dibenzylethylenediamine, chloroprocaine, diethanolamine, procaine, N-benzylphenethylamine, diethylamine, piperazine, tris(hydroxymethyl)aminomethane and tetramethylammonium hydroxide cations.

5. The composition of claim 1, further comprising a buffering agent.

6. The composition of claim 5, wherein the buffering agent comprises at least one agent selected from a group of acids consisting of hydrochloric, hydrobromic, hydroiodic, sulfuric, phosphoric, formic, acetic, propionic, succinic, glycolic, glucoronic, maleic, furoic, citric, glutamic, benzoic, anthranilic, salicylic, phenylacetic, mandelic, embonic, pamoic, methanesulfonic, ethanesulfonic, pantothenic, benzenesulfonic, stearic, sulfanilic, algenic, galacturonic acid and mixtures thereof.

7. The composition of claim 5, wherein the buffering agent comprises at least one agent selected from a group consisting of pregelatinized maize starch, polyvinylpyrrolidone, hydroxypropyl methylcellulose, lactose, microcrystalline cellulose, calcium hydrogen phosphate, magnesium stearate, talc, silica, potato starch, sodium starch glycolate, sodium lauryl sulfate, sorbitol syrup, cellulose derivatives, hydrogenated edible fats, lecithin, acacia, almond oil, oily esters, ethyl alcohol, fractionated vegetable oils, methyl, propyl-*p*-hydroxybenzoates, sorbic acid and mixtures thereof.

8. The composition of claim 7, wherein the buffering agent further comprises at least one agent selected from a group consisting of dichlorodifluoromethane, trichlorofluoromethane, dichlorotetrafluoroethane, carbon dioxide and mixtures thereof.

9. The composition of claim 1, wherein said composition is administered to an animal in a container selected from a group consisting of ampoules, multi-dose containers, and plastic or metal blister packs.

10. The composition of claim 5, wherein said composition and said buffering agent are formulated as medium selected from a group consisting of suspensions, solutions and emulsions.

11. The composition of claim 5, wherein the buffering agent further comprises at least one formulatory agent selected from a group consisting of a carrier, excipient, suspending agent, stabilizing agent and dispersing agent.

12. The composition of claim 5, wherein the buffering agent further comprises at least one agent selected from of a group consisting of poly(N-vinyl pyrrolidone), poly(methyl methacrylate), polylactide, polyglycolide and mixtures thereof.

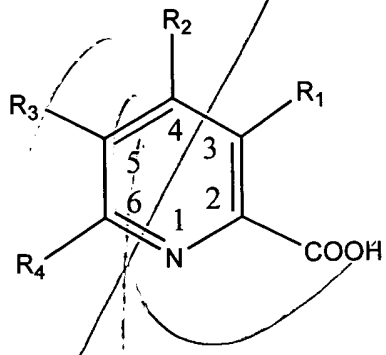
13. The composition of claim 1, wherein assembly or aggregation of the conformationally altered protein manifests in a disease selected from a group of diseases consisting of Alzheimer's disease, spongiform encephalopathy, cerebral amyloid angiopathy, Parkinson's disease, frontal temporal dementia, Pick's disease, amyotrophic lateral sclerosis, Huntington's disease and Creutzfelds-Jakob disease.

14. The composition of claim 13, wherein the conformationally altered protein contains at least one protein selected from a group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6 and SEQ ID NO: 7.

15. The composition of claim 13, wherein the conformationally altered protein contains a biologically active subunit of at least one protein selected from a group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, and SEQ ID NO: 7.

16. The composition of claim 13, wherein the conformationally altered protein contains a biologically active variant of at least one protein selected from a group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6 and SEQ ID NO: 7.

17. A composition capable of solubilizing a conformationally altered protein, said composition comprising a carboxylic acid anion of picolinic acid, its analogs, or derivatives and a cation, wherein the picolinic acid analogs or derivatives are of the following structure:



wherein R_1, R_2 and R_3 are selected from a group consisting of an oligopeptide, carboxyl group, methyl group, ethyl group, propyl group, isopropyl group, butyl group, isobutyl group, secondary butyl group, tertiary butyl group, pentyl group, isopentyl group, neopentyl group, fluorine, chlorine, bromine, iodine and hydrogen and R_4 is a butyl group; and wherein said composition is not zinc picolinate, chromium picolinate, molybdenum picolinate, iron picolinate, manganese picolinate, copper picolinate, boron picolinate or vanadium picolinate.

18. A method of preventing or reversing conformationally altered protein assembly or aggregation in an animal, comprising:

introducing picolinic acid, its analogs, or derivatives to the conformationally altered protein.

19. The method of claim 18, wherein said step of introducing a derivative of picolinic acid comprises introducing fusaric acid to the conformationally altered protein.

20. The method of claim 18, wherein the step of introducing picolinic acid, or its analogs or derivatives to the conformationally altered protein comprises introducing picolinic acid, its analogs, or derivatives to conformationally altered proteins, wherein said conformationally altered protein is at least one protein selected from a group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6 and SEQ ID NO: 7.

21. The method of claim 18, wherein the step of introducing picolinic acid, or its analogs or derivatives to the conformationally altered protein comprises introducing picolinic acid, its analogs or derivatives to the conformationally altered protein, wherein said protein contains a biologically active subunit of at least one protein selected from a group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6 and SEQ ID NO: 7.

22. The method of claim 18, wherein the step of introducing picolinic acid, or its analogs or derivatives to the conformationally altered protein comprises introducing picolinic acid, its analogs, or derivatives to the conformationally altered protein, comprises introducing picolinic acid, or its analogs or derivatives to said protein, wherein said protein contains a biologically active variant of at least one protein selected from a group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6 and SEQ ID NO: 7.

23. The method of claim 18, wherein the step of introducing picolinic acid, its analogs, or derivations to the conformationally altered protein comprises introducing picolinic acid, its analogs or derivatives, to an animal by injection.

24. The method of claim 18, wherein the step of introducing picolinic acid, its analogs, or derivations to the conformationally altered protein comprises introducing picolinic acid, its analogs or derivatives, to an animal orally.

25. The method of claim 18, wherein the step of introducing picolinic acid, its analogs, or derivations to the conformationally altered protein comprises introducing picolinic acid, its analogs or derivatives, to an animal buccally.

26. The method of claim 18, wherein the step of introducing picolinic acid, its analogs, or derivations to the conformationally altered protein comprises introducing picolinic acid, its analogs or derivatives, to an animal parenterally.

27. The method of claim 18, wherein the step of introducing picolinic acid, its analogs, or derivations to the conformationally altered protein comprises introducing picolinic acid, its analogs or derivatives, to an animal transdermally.

28. The method of claim 27, wherein the step of introducing picolinic acid, its analogs, or derivations to an animal transdermally comprises:

placing a permeable membrane in fluid communication with a solution comprising said picolinic acid, its analogs or derivatives, directly on the skin of said animal.

29. The method of claim 27, wherein the step of administering picolinic acid, its analogs, or derivations to an animal transdermally is enhanced by methods selected from a group consisting of iontophoresis, phonophoresis and by chemical penetration enhancers selected from a group consisting of fatty acids, fatty alcohols and terpenes.

30. The method of claim 18, wherein the step of introducing picolinic acid, its analogs, or derivations to the conformationally altered protein comprises introducing picolinic acid, its analogs or derivatives, to an animal rectally.

31. The method of claim 30, wherein said step of introducing picolinic acid, its analogs, or derivations to an animal rectally comprises administering a solution comprising picolinic acid, its analogs or derivatives, in combination with a glyceride, by suppository into the rectum of said animal.

32. The method of claim 18, wherein the step of introducing picolinic acid, its analogs, or derivations to the conformationally altered protein comprises introducing picolinic acid, its analogs or derivatives, as a depot preparation.

33. The method of claim 32, wherein said step of introducing picolinic acid, its analogs, or derivations as a depot preparation comprises introducing said picolinic acid, or an analog or derivative thereof by implantation or intramuscularly injecting a solution comprising picolinic acid, its analogs or derivatives, in combination with a polymeric or hydrophobic material.

34. The method of claim 33, wherein said step of introducing picolinic acid, its analogs, or derivatives comprises introducing said picolinic acid, its analogs, or derivatives by implantation or intramuscularly injecting a solution comprising picolinic acid, its analogs, or derivatives, in combination with a polymeric material, wherein the polymeric material is at least one selected from a group consisting of an emulsion in an oil and an ion exchange resin.

35. The method of claim 33, wherein the step of introducing picolinic acid, its analogs, or derivatives comprises introducing said picolinic acid, its analogs, or derivatives by implantation or intramuscularly injecting a solution comprising picolinic acid, its analogs, or derivatives, in combination with a hydrophobic material, wherein the hydrophobic material is a sparingly soluble salt of a picolinic acid anion, analogs or derivatives thereof.

36. The method of claim 18, further comprising disrupting a metalloprotein complexed with a transition metal ion containing at least one protein sequence selected from a group consisting of SEQ ID NO:1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6 and SEQ ID NO: 7.

37. The method of claim 18, further comprising disrupting a metalloprotein complexed with a transition metal ion containing a biologically active subunit of at least one protein selected from a group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6 and SEQ ID NO: 7.

38. The method of claim 18, further comprising disrupting a metalloprotein complexed with a transition metal ion containing a biologically active variant of at least one protein selected from a group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6 and SEQ ID NO: 7.

39. A method of preventing or reversing conformationally altered protein assembly or aggregation in an animal comprising introducing fusaric acid to a conformationally altered protein.

40. A method of treating conformationally altered protein assembly or aggregation in an animal comprising:

administering a therapeutically effective amount of the composition of claim 1 to said animal.

41. A method of treating conformationally altered protein assembly or aggregation in an animal comprising:

administering a therapeutically effective amount of the composition of claim 2 to said animal, wherein R_3 of said composition is a butyl group.

42. The method of claim 40, wherein the administration of said therapeutically effective amount of said composition of claim 1 comprises:

administering said therapeutically effective amount of said composition to cells within said animal.

43. The method of claim 42, wherein the administration of said therapeutically effective amount of said composition to cells comprises:

administering the composition of claim 1 to cells which are within an animal selected from a group consisting of a human, a cow, a sheep, a deer and a goat.

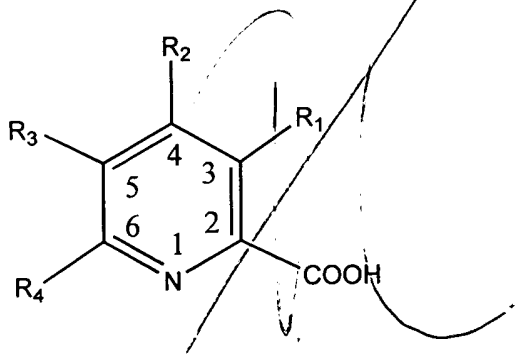
44. The method of claim 43, wherein the administration of said therapeutically effective amount of said composition to cells within a human comprises:

administering the composition of claim 1 to brain tissue cells within said human.

45. The method of claim 40, further comprising adding said therapeutically effective amount of said compound of claim 1 to a treatment regimen of at least one or more therapeutic agents.

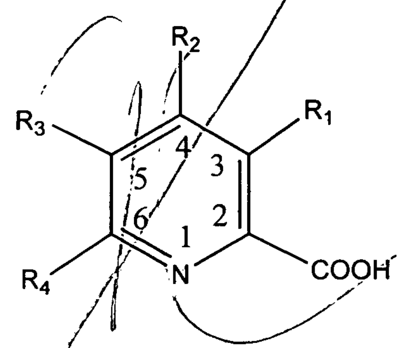
46. The method of claim 40, wherein the step of administering of said therapeutically effective amount of said compound of claim 1 further comprises treating conformational altered proteins caused by a disease selected from a group consisting of Alzheimer's disease, spongiform encephalopathy, cerebral amyloid angiopathy, Parkinson's disease, frontal temporal dementia, Pick's disease, amyotrophic lateral sclerosis, Huntington's disease and Creutzfelds-Jakob disease.

47. A composition capable of solubilizing a conformationally altered protein, said composition comprising an agent represented by the following structure:



and wherein R_1, R_2, R_3 and R_4 are selected from a group consisting of an oligopeptide, carboxyl group, methyl group, ethyl group, propyl group, isopropyl group, butyl group, isobutyl group, secondary butyl group, tertiary butyl group, pentyl group, isopentyl group, neopentyl group, fluorine, chlorine, bromine, iodine and hydrogen.

48. A composition capable of solubilizing a conformationally altered protein, said composition comprising an agent represented by the following structure:



wherein R_1, R_2 and R_3 are selected from the group consisting of an oligopeptide, carboxyl group, methyl group, ethyl group, propyl group, isopropyl group, butyl group, isobutyl group, secondary butyl group, tertiary butyl group, pentyl group, isopentyl group, neopentyl group, fluorine, chlorine, bromine, iodine and hydrogen; and R_4 is a butyl group.